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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/606,135 | 06/25/2003 | Takayuki Toshima | 199372002501 | 4004 |

7590 10/27/2004
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EXAMINER

PERRIN, JOSEPH L

ART UNIT PAPER NUMBER

1746

DATE MAILED: 10/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,135

Applicant(s)

TOSHIMA ET AL.

Examiner

Joseph L. Perrin, Ph.D.

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 51-64 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 51-64 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/628,235.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20030625
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/628,235, filed on 28 July 2000.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
3. The following title is suggested: Substrate Processing Apparatus for Resist Film Removal.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
 1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 51-60 & 63-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,242,165 to Vaartstra in view of U.S. Patent No. 5,863,348 to Smith, Jr. *et al.* (hereinafter "Smith, Jr.").

Re claims 51-54 & 57-60, Vaartstra discloses a semiconductor processing apparatus including a process vessel 14, a substrate holding member 118, a plurality of supply sections including ozone and water (see, for instance, col. 3 lines 6 & 21) connectable to flow controllers 120, a solvent heater 124 which generates and heats solvent vapor (of the type supplied by Watlow Co. which are well known to include temperature controllers), a main heater 132 controlled by temperature control unit 130, a discharge flow controller 136 (see Figures 2-3 & col. 8, line 64 – col. 9, line 67).

Re claims 55-56 & 63-64, Vaartstra discloses using a purge gas supply (col. 8, lines 40-42). It is noted that the heater 124, which is inline with the fluid supplies, is capable of heating the gas which would produce a hot gas source.

Although Vaartstra discloses controlling the temperature and pressure of the heating mechanism (see, for instance, col. 9, line 38 *et seq.*) and appears to implicitly disclose an automated system, Vaartstra does not explicitly disclose using a control unit to control all such variables such as temperature and pressure. The prior art is replete with teachings of automated systems controlled and operated by a "control unit" (computer). For instance, Smith, Jr. teaches that it is well known in a semiconductor processing system to provide a control unit (computer 200) for the purpose of monitoring, controlling and adjusting variables of operation such as "temperature" and "valve positions" (pressure).

Therefore, the position is taken that a person of ordinary skill in the art at the time the invention was made would have been motivated to modify the system of Vaartstra with the computer system of Smith, Jr. for the purpose of controlling operating parameters such as temperature and pressure. Moreover, the position is taken that it would have been obvious to one having ordinary skill in the art at the time the invention was made to control such operating parameters by automation via a control unit or computer since it has been held that broadly providing a mechanical or automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art. *In re Venner*, 120 USPQ 192.

8. Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vaartstra and Smith, Jr. as applied to claim 51-60 & 63-64 above, and further in view of U.S. Patent No. 4,917,123 to McConnell *et al.* (hereinafter "McConnell").

Recitation of Vaartstra and Smith, Jr. are repeated here from above.

Although Vaartstra discloses draining the processing fluid, Vaartstra does not explicitly disclose using condensing means. It is noted that the prior art is replete with teachings of fluid condensing fluid to remove vapors from a system.

McConnell discloses a photoresist stripping apparatus (col. 1, line 36) using ozone (ozone injection valve 206) and further including a "mist trap" having a cooling unit and discharge unit (see Figure 2, steam condenser 171 including draining means, venting means and condenser coil; col. 19, line 58 *et seq.*).

Therefore, the position is taken that a person of ordinary skill in the art at the time the invention was made would have been motivated to modify the system of Vaartstra and Smith, Jr., with the fluid condensing means of McConnell for the purpose of recovering/removing vapor phase fluids in a wafer processing system due to the well known advantages of using condensers to recover/remove vapor phase fluids.

9. Claim 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vaartstra, Smith, Jr., and McConnell as applied to claim 61 above, and further in view of U.S. Patent No. 4,341,592 to Shortes *et al.* (hereinafter "Shortes").

Recitation of Vaartstra, Smith, Jr., and McConnell are repeated here from above. However, none of the references explicitly disclose using an ozone killer. Shortes teaches that it is known to provide a photoresist stripping apparatus with a means for killing/decomposing ozone upon exhausting excess ozone "as a safety precaution because of the inherently dangerous nature of ozone." (see col. 4, lines 33-42 & ozone reducing scrubber 23 of Figure 1) Therefore, the position is taken that a person of ordinary skill in the art at the time the invention was made would have been motivated to modify the combination of Vaartstra, Smith, Jr., and McConnell with the ozone scrubber of Shortes for the purpose of decomposing ozone to elemental oxygen to minimize hazardous materials from being exhausted/vented to the atmosphere.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph L. Perrin, Ph.D. whose telephone number is (571)272-1305. The examiner can normally be reached on M-F 7:00-4:30, except alternate Fridays.
11. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael E. Barr can be reached on (571)272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joseph L. Perrin, Ph.D.
Examiner
Art Unit 1746

jlj

A handwritten signature in black ink, appearing to read "Joseph L. Perrin", is written over the printed name and title.